July 13, 2015

Russell Dill, Public Works Director
City of Hardin
406 N Cheyenne Ave
Hardin, MT 59034

RE: Comprehensive Performance Evaluation at Hardin Wastewater Treatment Facility

Dear PWD Dill:

Enclosed you will find the report based on the Comprehensive Performance Evaluation (CPE) conducted for the Hardin Wastewater Treatment Plant (WWTP) by the Water Pollution Control State Revolving Fund (WPCSRF) program of the Department of Environmental Quality (DEQ). This facility is functioning as an Extended Aeration Activated Sludge (EAAS) Wastewater Treatment Plant (WWTP) providing secondary treatment in an Oxidation Ditch (OD). The CPE was performed over a period from May 28 - 29, 2015. On behalf of the CPE team here at DEQ, Paul LaVigne and Mike Abrahamson and myself, I wish to extend our appreciation for the cooperation you and your staff at the treatment facility and those in your public works programs gave to us as we reviewed the performance capabilities of the plant.

Following the report presented at the exit meeting at the city offices on May 29, we reviewed our report findings and expanded the discussion of the Performance Limiting Factors (PLFs) noted during our exit meeting. We hope these findings will provide further guidance to you concerning optimization of the treatment processes and assist in helping the facility avoid permit violations. As such, I am now releasing this report and these additional suggestions to improve plant performance and update this report. As explained during the CPE, this process has been adopted by the WPCSRF program as part of an area-wide strategy to assist Montana communities in optimizing treatment plant performances.

The CPE evaluation team reviewed plant design and treatment capabilities; current plant loadings from the community; administration, operation and maintenance of the plant; pollution prevention issues; and the financial status of the wastewater utility. Over 70 factors are considered when evaluating a treatment system in the CPE process. These PLFs are ranked according to effect on plant treatment capability. The factors are rated as follows: (A) factors have a major effect on a long-term repetitive basis; (B) factors have a minor impact over a long period or a major effect occasionally; and, (C) factors have a minor effect on plant performance. The PLFs at the Hardin WWTP were prioritized and presented to your staff at the exit meeting following our on-site inspection.

Briefly summarizing this report, the Hardin WWTP is classified as an Extended Aeration Activated Sludge - Oxidation Ditch Facility. The Hardin WWTP was placed into operation in 1980 with an upgrade to the headworks facility in 2006 and an upgrade to the disinfection system in 2009. The facility was designed for and is capable of meeting secondary removal criteria within the City's existing NPDES permit. It is operating in compliance with the existing permit and records reflect the facility is doing an excellent job of BOD, TSS, and *E.coli* removal.

Out of over 70 factors considered, the CPE team identified: Three (3) B factors and two (2) NR – No Rating factors. The CPE team added the two (2) NR factors as issues of concern to be addressed, but that are not likely to affect treatment optimization at this time.

Maintenance – Equipment Age (B)

A critical WWTP operational strategy for process control in the OD is to try to maintain a suitable DO level, but the water level control weir for the OD effluent does not function properly and the DO level is based on a constant OD water level. The headworks screening and grinding equipment shows signs of advanced corrosion and other structural problems that create problems in the downstream processes.

Design – Plant Loading – I/I (B)

High stormwater flows force the system to bypass to an emergency lagoon, and the organic load is bypassed, as well, since the flows are evaporated in the pond and not returned to the main plant flow. Additionally, the high infiltration and inflow sources have other effects on plant processes.

Design – Unit Design Adequacy - Preliminary (B)

The screening and grinding equipment has been corrosively degraded in the headworks building. The preliminary treatment system bypasses excessive material into the downstream processes. Operator safety may be impacted by the atmosphere in the building.

No Rating (NR)

The secondary clarifier weir is not level and could lead to diminished performance due to short-circuiting; the Oxidation Ditch tilting weir is inoperable; the UV system is exposed to bitter cold temperatures in the winter causing problems with the UV light bulb cleaning and maintenance program.

No Rating (NR)

The design of the Oxidation Ditch includes surface aerator rotors, one on each side, and two mixers installed on the ditch floor near the first set of rotors for mixing without aeration. The WWTP has opportunities to achieve advanced level treatment, reducing nitrogen and phosphorous, while achieving cost savings though reducing energy and chemicals by cycling an aerator rotor on and off, and using the mixers to keep the biomass in suspension during the off period. Additional possibilities include, using VFD controls on the aerobic digester blower motors and repairing the tilting weir in the OD for better DO control.

Summary

Three B factors and two NR concerns were identified during the CPE that either affect or can affect the Hardin WWTP performance. Achieving long-term compliance with NPDES permit conditions is a goal for wastewater treatment facilities. It is the evaluation team's judgment that the Hardin wastewater treatment facility operating team will make good progress toward achieving this goal if the performance-

limiting factors identified in this report are addressed. At this time, additional technical assistance from the WPCSRF program at DEQ does not appear to be warranted.

The value to the City of Hardin in the CPE findings is the opportunity to quickly address the relatively few factors that should benefit the city in the long term. This report is intended to identify those factors that result in violations of the NPDES permit as well as other activities that limit optimization of the plant performance. The report findings should also help identify issues that have the potential to impact plant performance in the near future.

The Hardin WWTP serves the city well by meeting discharge limits consistently, and is operated, maintained and managed by an active and engaged professional staff at the plant and at the public utility offices. It is apparent from our discussions with all the utility staff that they take pride in the condition and performance of this facility. This report should be used to enhance their efforts and support optimized treatment performance of the WWTP.

The PLFs noted above are listed at the end of the CPE report, and are the same items discussed during the exit meeting. As part of the CPE process, we request a written response from your staff within 60 days regarding the factors listed in the report. The response should indicate steps planned to address each PLF, or provide an answer to our concerns about that particular factor. A response can be sent to the DEQ at the address listed on the letterhead to the attention of Bill Bahr.

As part of the WPCSRF program, we would like to provide additional technical assistance to the WWTP staff through our on-site technical assistance program. We currently have Grant Weaver, an operations specialist, working with select facilities in Montana to achieve nutrient removal and cost savings. We are pleased that you will be participating in this program. Please contact me at 406-444-5337 for further information or to provide any comments, corrections, or suggestions.

Enclosure: CPE Report

Sincerely,

Earl Wm Bahr
Environmentalist Specialist
DEQ WPCSRF Program

CC: David Rise, USEPA, Montana Office, Helena